ORIENTATION AND LEVEL:

THE NEED FOR A DUAL CONCEPT

APPROACH TO ACADEMIC MOTIVATION.

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ABSTRACT

This study was an attempt to clarify some issues surrounding academic motivation, and to investigate some of the relationships surrounding academic motivation, ability, and achievement. It was found that academic motivation is comprised of two separate and independent constructs; level and orientation. In addition to being independent of each other, motivational level and orientation display markedly different relationships with other academic variables. Motivational level appears to be quite independent of ability and to have significant predictive qualities with regard to achievement. Motivational orientation on the other hand has little or no effect on achievement beyond that which can be attributed to ability. It is argued that these findings, in conjunction with previous research, mean that motivational level and orientation must be considered seperately and cannot be combined into a single motivational factor. This division was used as the basis for a model of academic motivation which includes several single factors and wider theories which contribute to achievement motivation. Some of these contribute to the development of motivational level, while others relate to it's orientation. Attribution theory appears to be the sole factor which is relevant to both aspects of motivation. The construction of this model allows the addition of further factors, and sheds some light on how the many factors and theories relevant to academic motivation relate to each other and to resultant motivation, without arguing the need for adoption of one theory or approach over another.

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INTRODUCTION

In today's world, educational attainment is not only important for those who wish to become doctors or lawyers. It is becoming increasingly crucial for people of all walks of life. As society becomes more and more technologically developed there are a dwindling number of employment prospects for those with a limited range of skills or knowledge. Clearly, as the need for a more educated population becomes more apparent, the question of how this is to be achieved becomes more pressing. Although change can most easily be implemented at an institutional level, those factors that enable an individual to perform to their full potential must play a large part in determining the way in which education is delivered.

Previous research has uncovered a very large range of factors that can influence an individuals' academic performance to a greater or lesser extent. Some of these factors are social in nature, such as socioeconomic status, and others are individual characteristics and it is this last group that is of particular interest to the education sector.

Individual attributes that relate to education have received a great deal of attention in research, particularly questions of ability- and motivation-related factors. This profusion of research has led to the development of several different theories and attempts to include a huge range of factors, particularly cognitive, in those theories of motivation. Consistently the strongest and most reliable predictors of academic achievement however, are measures of intelligence and also more specific measures of ability which attempt to tap those aspects of intelligence which are directly related to academic performance.

ABILITY:

Even a cursory examination of the research relating to ability and achievement leaves one in no doubt as to the strength of the relationship between the two. In a review of correlational research in many areas, Folman (1984) rated correlations according to their strength and consistency. Those which appeared to represent the real world he rated as "consummate confidence", among this group was the relationship between IQ and school achievement. The strength of this relationship varied depending on the level of schooling, ranging from r=.50 to .55 in U.S. college students up to .85 to .90 in grade one. In another review (Mohan & Gulati, 1986) the relationship between intelligence was found to consistently lie around the .50 mark.

As well as research into the relationship between IQ or intelligence and achievement, several other researchers have concentrated on similar concepts but have stressed aspects of intelligence that are more directly related to the educational environment. Most of these, with the exception of Ravens Progressive Matrices, have tested students numerical and verbal reasoning abilities. Measures such as the Test of Scholastic Abilities (TOSCA) which concentrate on these aspects generally correlate with the verbal subscale of the WISC-R to a greater extent than with the performance subscale and the entire WISC-R scale (St George et al, 1990).

Tests such as the TOSCA have often been developed not by social scientists wishing to study education, but rather by educational institutions to distinguish between students on their capacity for learning and their potential. As a result, these

measures are good measures of academic or scholastic ability relative to one's peers, and although not measures of general intelligence or IQ, may be seen as measures of those aspects of intelligence which relate directly to the educational environment and hence more suitable for research on education.

Research using a variety of ability measures has consistently reported a relationship between ability and achievement that is of a comparable strength to that between intelligence and achievement. Fraser et al. (1986) found a correlation of .30 between ability and academic achievement, and Keith and Benson (1992) reported a correlation of .46 between ability and students grades.

The research evidence for a consistently strong relationship between achievement and either general intelligence or a more specific ability measure is apparently conclusive. However, although this relationship may explain a large amount of the variance in achievement there is still much left unexplained. It has often been suggested (Mohan & Gulati, 1986) that a student's ability may act as a limiting factor, or provide a ceiling for possible achievement beyond which an individual cannot reach. In this way, ability dictates an individual's potential while other factors, either social or individual, determine how much of that potential is realised. A great range of cognitive and personality factors have been suggested as having significant effects on achievement level.

MOTIVATION:

Since the early 1980s (Keith & Benson, 1992) one of the individual factors pertaining to educational attainment to have attracted significant attention is students' motivation. Many varied studies have been carried out and have contributed to an increasingly detailed, and complicated, body of knowledge about academic motivation. The study of motivation is a history of different approaches and theories, some have postulated the existence of a unitary construct of achievement motivation, and the research they have stimulated has reflected this basic view (eg. Feldhusen & Hoover, 1986; Fraser, Welch & Walberg, 1986; Lowell, 1952). Others have used a multi-factorial approach to motivation. This view has become more prevalent with the rise of a more cognitive approach to academic motivation that has stressed the need to study and understand the large array of cognitive factors which combine to produce academic motivation. Although all of these theories, such as attribution theory (Weiner, 1984), expectancy-value theory (Atkinson, 1964), and intrinsic/extrinsic orientation each explain one aspect (or more) of academic motivation, none can be said to give a complete picture on its own.

The study of achievement motivation was largely begun by David McClelland (eg McClelland et al, 1953), he began using the Thematic Apperception Test (TAT) to measure an individual's achievement motive or need to achieve. Much research since has shown the methods used by McClelland do indeed identify a generalised achievement motive and that this motive is predictive of behaviour over a wide range of situations. While McClellands' early work enabled the identification of an

achievement motive with some predictive qualities, it did little to distinguish the factors and causes that go to make up achievement motivation.

Since McClelland first established the existence of an achievement motive, many researchers have studied academic motivation in this manner (Boyle et al., 1989; Schultz, 1993; Uguroglu & Walberg, 1979). However, while this approach does have its merits, if progress is to be made in improving students' motivation then study and knowledge of the causes of motivation is required. Indeed, in a review of research Uguroglu and Walberg (1979) found that while there is a correlation between a general measure of achievement motivation and learning it is relatively weak and that measures of achievement notivation composed of several more specific factors provided better prediction of learning than those comprising one more general concept.

Cognitive Factors and Theories:

A large range of cognitive factors have been connected with the development, both style and level, of academic motivation. However, these cognitions can largely be broken down into three main groups;

-Performance expectancies,

-Self perceptions of competence and control,

-Attributions about the cause of achievement outcomes.

Cognitive research and theories have included cognitions from at least one of these groups in an attempt to explain achievement motivation as a whole or a part thereof.

Expectancy-Value Theory:

Expectancy-value theories of achievement motivation (eg Atkinson, 1964) have included performance expectancies as a major part of achievement motivation. Expectancy of success is essentially the only cognitive component in expectancy-value theories and, in conjunction with the perceived value of success, is said to determine the strength of achievement motivation. The final behaviour and apparent motivation of any individual reflects the balance between two acquired traits, the motive to achieve and the motive to avoid failure. Research has focussed on predicting the behaviour of those dominated by either the motive to achieve or the motive to avoid failure (Atkinson & Litwin, 1960). In a situation where the individual is free to choose whether or not they wish to perform or achieve, behaviour is determined by which of the two traits is dominant.

In environments such as schools where people are required to perform, such as in school, expectancy-value theory comes into play. In this case, the strength of the motive to achieve will be determined by the perceived likelihood of success (expectancy) and the attractiveness of success (value). The more difficult the task is, the greater is the attractiveness of success but the lesser is the likelihood of success, and because the relationship between the two is multiplicative, the motive to achieve is greatest when the likelihood of success and failure are equal. Similarly, if the motive to avoid failure is predominant then the strength of the motive is determined by the expectancy of failure and the unattractiveness of failure.

While expectancy-value theory does give some understanding of achievement motivation, it cannot be said to explain academic motivation completely, nor to include all of the cognitive factors involved.

Attribution Theory:

As a theory attribution theory has a very large cognitive component and specifies in greater detail the effects those cognitions have on motivation. The basic premise of attribution theory is that individuals search for understanding, seeking to discover why an event has occurred (Heider, 1958; Kelley, 1967; Weiner, 1980). A causal attribution answers a why question, such as "Why doesn't Johnny like me?" or "Why did I get a poor mark in the exam?" (Weiner, 1984). The search for causes, and hence attributions, is made when an unexpected and/or undesirable event occurs. Attributions provide the explanation which reduces the surprise and uncertainties that surround unexpected events. As well as this immediate effect, attributions also have implications for future motivation. Knowing why one has failed can (or not, depending on the attributions made) provide a basis for motivation to improve and hence increase the likelihood of future success. The number of possible attributions is virtually infinite, however some appear to be more common in certain situations. In academic or scholastic situations (and achievement situations in general) there is a great deal of evidence that success and failure are often ascribed to ability, an aspect of motivation (effort, interest), other people, physiological factors (ill health), task difficulty, and luck (Weiner, 1984). Because of the range of possible attributions it is necessary to identify the underlying dimensions of attributions for any cohesive theory to be developed.

Causal Dimensions:

The internal-external distinction between causes which stem from within the individual (eg ability, effort) and those from without, or environmental factors, is present in many guises in many theories. Primarily associated with the locus of control construct (Rotter, 1966) it has also been present in motivation theories, although often under different labels. It is evident in the origin-pawn distinction (de Charms, 1968) and more obviously in intrinsic-extrinsic motivation theory (Deci, 1975), as well as in attribution theories. Those internal factors which are most common in achievement attributions are ability, effort, and health, while task difficulty, help from others (or otherwise), and chance are considered external or environmental determinants.

This internal-external distinction is not sufficient in itself however. This is apparent when it is considered that attributions of causality due to ability or effort have different effects on future behaviour despite the fact that both are internal attributions (eg Weiner, Nierenberg, & Goldstein, 1976). The differing effects these two attributions have mean that they must differ on some other dimension. The second dimension of causality that was developed to explain this was stability (Heider, 1958; Weiner, 1980). The stability dimension distinguishes between causes on the basis of their stability over time. Hence the differing effects of causality being attributed to ability or effort can be explained. While both have an internal locus, ability is often perceived as being an enduring trait while effort changes from one time to the next. This means that success or failure which is attributed to ability is much more predictive of future outcomes than when it is ascribed to effort. This difference has obvious implications for future motivation, particularly when failure is experienced. If

an individual attributes failure to a stable trait such as ability then future failure is also to be expected, while if failure is attributed to a changeable concept such as effort then future success or failure is not assured.

Similarly, it has been demonstrated that causes differ in their stability, or generality, across situations (Abramson, Seligman, & Teasdale, 1978). This dimension was called globality by Abramson et al. (1978). Weiner (1984) groups together globality (cross-situational consistency) and stability (temporal consistency) as two aspects of a single causal dimension that he calls causal constancy.

It then became apparent that a third dimension of causality was needed when it was noted that some causes which were classified identically on both the locus and constancy dimensions resulted in different reactions (Weiner, 1979). For example failure attributed to lack of effort leads to different reactions than failure attributed to ill health although both can be classified as internal and unstable. The difference here is the control the individual has. An individual's effort is the responsibility of that individual, whereas things such as illness cannot typically be controlled.

More recently yet another dimension has also been proposed after different behaviours still occurred after apparently identical attributions were made (Anderson, 1983). This dimension is intentionality. Failure due to a lack of effort or poor work strategies can both be considered internal, non-constant, and controllable causes, and yet failure attributed to lack of effort would result in greater punishment than failure due to poor work strategies. The difference is the intentionality of the act, while lack of

effort is generally considered an intentional act people typically do not deliberately use poor strategies. Because intentionality and controllability co-vary in most situations Weiner (1984) has included both under the causal dimension of responsibility.

To summarise, at present there are three dimensions of causality which include five types of causal distinction;

1: Locus

2: Constancy

a, temporal stability

b, globality

3: Responsibility

a, controllability

b, intentionality

While the number of possible attributions is for all intents and purposes infinite, a taxonomy of this kind enables each and every attribution to be included in a relatively simple theory of motivation. How do causal attributions relate to motivation and to future behaviour? To answer that question one must consider the implications of the attributions made not only for future cognitions but also for the individuals' emotional state.

Weiner (1984) suggested that the behavioural effects of causal attributions are mediated by the psychological consequences of those attributions. Psychological consequences of attributions can take two forms, cognitive and affective. According to

Weiner, cognitive consequences primarily take the form of expectancies for future success. Expectancy-value theorists like Atkinson have already shown that an individuals' motivation for a task is linked to their expectancies of success. Weiner (1984) suggests the mechanism that leads to the development (and change) of expectancy of success is the attribution of causality, more specifically perceived causal stability. In fact Weiner goes on to say that the linkage between perceived causal stability and expectancy change can be considered "a fundamental law in psychology". Ascription of causality to stable factors after success results in greater increases in expectancy of future success, or decreases after failure, than do unstable causal attributions. For example, success on a mathematics test that is attributed to mathematical ability ("I am good at maths"), will lead to an increase in expectancy, whereas success attributed to unstable factors ("It was an easy test."), is unlikely to lead to an increase in expectancy of future success.

Attribution theory as presented thus far then leads to a theory of motivation and action which takes the following form:

Causal antecedents

⟶ Causal ascriptions

⟶ Causal dimension (constancy)

⟶ Expectancy of success

⟶ Action

(Weiner, 1984).

However, Weiner also suggests that there is another consequence of attributions that needs to be included in any motivational theory, and which has an immediate effect on motivation and behaviour. Emotional reactions and their consequences have proven difficult to include properly in (particularly cognitive) theories of motivation. However, it is possible to include affect in an attributional framework if the assumption is made that cognitions are sufficient determinants of feeling states .

While success or failure is a prime determinant of following affective states regardless of the causal attributions made, causal attributions do have an effect in discriminating between specific emotions. Some affects which are related to causal dimensions and are relevant to an achievement context are pride, self-esteem, anger, guilt, pity, and hopelessness.

Not surprisingly, pride and positive self-esteem are experienced when positive outcomes or success are attributed to internal factors. Similarly, negative effects on self-esteem are felt when an individual ascribes causality of negative outcomes to the self (Weiner, Russel, & Lerman, 1978, 1979). Pride and personal esteem are self-reflective emotions and are affected by the locus dimension of causality, more particularly by an attribution of causality to the self or internal factors. Hopelessness is elicited when a negative outcome is attributed to constant factors (Weiner et al., 1978, 1979). Obviously any attribution and consequent feeling that future effort toward achievement, academic or otherwise, is pointless will have dramatic effects on an individual's motivation and achievement.

Weiner (1984) suggests that affect is an immediate motivator of behaviour and mediates the relationship between thought and action. However, emotions are also indirect motivators of behaviour as any emotion that is experienced then becomes a salient antecedent of further causal thinking and could affect attributions made and thence modify both emotion and motivation.

A full attributional model of motivation must therefore include emotions. Weiner (1984) adapted his model to include both affective and cognitive consequences of causal attributions under the heading of psychological consequences.

Causal antecedents

⟶ Causal ascriptions

⟶ Causal dimensions

⟶ Psychological consequences

cognitive (expectancy)

affective (self- or other-directed)

⟶ Behavioural consequences

(Weiner, 1984)

Although this theory provides a logical and useful picture of achievement motivation it must be remembered that human beings being as complex and varied as they are, the effects described here will not always follow from the same attributions. This is particularly true of affective responses and their effects on behaviour. However, these variations may often be due to individuals not classing the same attribution in the

same way among the causal dimensions outlined previously. The relationships between specific events, attributions, psychological consequences, and behaviour which can be derived from this theory appear to hold true in most cases however (Weiner, 1984).

Additional Factors:

As well as the theoretical perspectives of motivation there is a great deal of research which has identified isolated cognitive factors. Some of these factors are related to, or implicated in, more comprehensive theories and models, but others appear to be relatively isolated phenomena.

Self-efficacy:

One area that has proven to be of great importance is that of perception. A student's perception of their own ability level or self-efficacy has been shown to have several motivational and educational effects. Schunk (1982, 1984a, 1984b) has found that self-efficacy beliefs are based on past performance and effect persistence, task choices, effort expenditure and also task performance. Self-efficacy theory is related to attributional theory in that causal attributions play a part in developing, changing, and maintaining self-efficacy beliefs (Schunk, 1982). However, in contrast to attributional theory it is self-efficacy and not the attributional judgement which drives consequent achievement behaviour. The essential basis of the self-efficacy model is that positive self-efficacy sustains task involvement, leading to skill development and achievement which in turn enhances self-efficacy beliefs.

Perceived control:

Students' perception of the amount of control they have over their environment and success or failure also appears to be significantly related to their achievement at school and also on a variety of specific problem solving tasks. Additionally, research has also suggested that students' intellectual performance is undermined by a perception that they lack control (Dweck & Goetz, 1978; Findley & Cooper, 1983). Perceptions of control have important ramifications for motivation in that if a student perceives themselves as having little or no control over achievement outcomes then greater effort and persistence is unlikely to occur.

There have been two main approaches to the study of perceived control, one is based on the idea that perceived control is situation specific and the other considers it a more generalised phenomenon. Attribution theory is again important as the main example of the situation specific approach. As was stated earlier, one of the dimensions of causal attributions which affect behaviour is controllability. Learned-helplessness theory (eg. Seligman, 1975) on the other hand sees perceptions of control as a more stable characteristic. The two are not necessarily mutually exclusive however, research on learned helplessness has shown its development after repeated failure through real or perceived lack of control and a subsequent generalisation of feelings of helplessness. If attributions of causality for failure are consistently made which involve a degree of uncontrollability then learned helplessness is a likely result. Indeed Abramson et al. (1978) have developed learned helplessness theory in such a way that makes explicit links between attributional style and learned helplessness. Actual lack of control does not always lead to helplessness and neither do high levels

of control necessarily result in persistence and other achievement behaviour. Instead attributional style and the students' perception are the crucial factors in the development or otherwise of learned helplessness (Abramson et al., 1978).

Theories of Intelligence:

Individuals do not all view intelligence and ability in the same way, any individual will have one of two different perspectives on ability, and which is adopted by the individual has profound implications for achievement motivation. Those who have an entity theory of intelligence (entity theorists) believe that intelligence is fixed, while those who adopt an incremental theory view intelligence as a malleable quality which can be improved with further learning and development. Students' theories of intelligence are not only related to achievement (Dweck & Legget, 1988) but also to several of the concepts mentioned previously.

A students' concept of intelligence has an important part to play in attribution theory. Concepts of intelligence have been shown to influence a student's interpretation of success or failure (Dweck & Legget, 1988) and the effects of an attribution of causality to ability will differ greatly depending on the concept of ability held. Entity theorists are likely to interpret failure attributed to ability in a negative manner and lower expectations and achievement motivation. Those who hold an incremental view may view failure as indicating an area in which improvement is needed rather than where ability is simply lacking. As a result, those holding an incremental theory are likely to display higher levels of persistence and motivation in

general than entity theorists, particularly in the face of repeated failure when an entity view may lead to learned helplessness (Diener & Dweck, 1978, 1980).

The differing goals set by those with differing concepts of intelligence has also come in for much attention. Entity theorists set performance goals in which the goal is to gain positive judgements and avoid negative judgements of competence. Incremental theorists on the other hand set learning goals, where the aim is to increase competence. These differing goals lead to quite different approaches, or orientations, toward learning and achievement.

Motivational Orientation:

There has been a great deal of interest in students' differing orientations toward academic achievement and learning. This has ranged from relatively specific approaches such as investigating differences in goal setting to more wide-ranging concepts such as task versus ego involvement and particularly intrinsic-extrinsic motivation.

Mastery Oriented versus Helpless:

The study of students' theories about intelligence led to the suggestion that those with differing theories are likely to set themselves different types of goals given the same situation. Students who are incremental theorists and hence believe that intelligence is malleable will set goals which aim to increase competence. Because of the type of goal being set incremental theorists are usually mastery oriented, that is they seek challenge which fosters learning and displays high levels of persistence

regardless of their current perceptions of their own ability. In short, because of their belief that intelligence can be improved, incremental theorists will behave in a manner that facilitates this.

Entity theorists' behaviour is organised around a belief that their ability is fixed and their achievement related behaviour can be quite different to that of incremental theorists. Entity theorists are motivated to behave in a manner that is related to others' judgements of their competence. They set performance goals which aim to gain positive and avoid negative judgements of their own ability. The effect of setting performance goals is twofold and dependent on students' perception of their ability. Those with a high belief in their ability are also likely to behave in a mastery oriented fashion, but those who perceive themselves as having low ability will display a different pattern.

Entity theorists with a low perception of their own ability are likely to display a "helpless" behaviour pattern (eg. Ames, 1984; Diener & Dweck, 1980) which is similar to learned helplessness. Those displaying this behaviour pattern have as their main goal the avoidance of negative judgements of their competence. To this end they avoid challenge or situations and tasks where success is less than certain and also display low levels of persistence at those tasks which they do attempt. Alternatively, they may choose excessively difficult tasks where failure is almost certain regardless of ability. In these ways they avoid negative ability judgements by engaging in task behaviour where failure can be attributed to other factors, either a lack of effort or the impossibility of the attempted task. Because entity theorists who view themselves as

incompetent see this as a fixed quality, they respond negatively to situations in which performance goals are salient and this leads to a helpless style of achievement related behaviour.

Task versus Ego Involvement:

Nicholls (1984) has used a similar method of distinguishing between students on their conceptions surrounding ability. He refers to the students' level of differentiation between ability and effort. Students who have a less differentiated conception of ability will see more effort as leading to more learning, which is equivalent to more ability. On the other hand, those with a more differentiated view see effort as increasing performance, but towards, or up to, their level of ability.

To those who have a less differentiated conception, expectancies of success are closely related to perceptions of task difficulty. If a task is seen to require high effort or if the chances of success or failure appear uncertain, the task will seem moderately difficult and success will imply high ability. If however, a task appears easy it is seen as offering little chance of learning or demonstrating high ability. Lastly a task which appears to be too hard to complete regardless of the effort involved will offer no chance of demonstrating ability, but some chance of learning. In sum, those who are task-involved prefer challenging tasks in which there are moderate subjective probabilities of success (Nicholls, 1984) and also good opportunities for learning and increasing ability.

For those whose concept of ability is more differentiated, or ego-involved, subjective expectancies of success and effort required are insufficient to estimate task difficulty and the chances of success. When ability is conceived of as a capacity then that capacity and task difficulty are defined with reference to peers. Ability is demonstrated by success on a task which many of one's peers have failed. If many others can succeed on a task then that task is obviously simple and high ability can not be shown, but failure on such a task is indicative of low ability. Failure on a difficult task in contrast does not indicate low ability. For students who are ego-involved high ability is shown by being above average. The effects of ego-involvement differ depending on the students' perception of their ability level, in a similar manner to the mastery oriented versus helpless division used by Dweck (eg 1986) and others.

Ego-involved who consider themselves of high ability will behave in a manner similar to task-involved, seeking to demonstrate their ability on moderately difficult tasks. But ego-involved students with a low perception of their capacity will avoid tasks of moderate difficulty and prefer tasks which are very easy or difficult where it is possible to avoid displaying a lack of ability.

Intrinsic versus Extrinsic Orientation:

While these two approaches both make a significant contribution to an understanding of different orientations and their effect on academic motivation and behaviour, particularly the initiation of behaviour, they can be considered part of a larger whole.

Intrinsic Motivation:

Intrinsic motivation (Deci, 1975) is a concept that has grown out of the ideas of a number of people. Bruner (1962) put forward the idea that to help children think and learn we must free them from the constraints of rewards and punishments. He stated that rewards and punishment lead to patterns of behaviour in which the child seeks to gain rewards and avoid punishment rather than to learn. By successfully incorporating those behaviour patterns the student will become adept at saying and doing what the teacher wants, and if they are good enough at it they may even become an overachiever in the school system. The student may achieve this without developing the capacity to transform what they have learnt into flexible, useful cognitive structures. Bruner considered that rather than being seen as deserving of rewards or punishment, success and failure should be interpreted as information which can be acted upon to extend or improve learning.

> Neil (1960) was similarly disparaging of rewards and punishment, saying "To offer a prize for doing a deed is tantamount to saying that the deed is not worth doing for its own sake."

Neil acknowledged that rewards are a lesser evil than punishment but suggested that the intrinsic satisfaction with one's accomplishments is the best reward and that external rewards tended to reduce that internal satisfaction. Montessori (1965) and Rogers (1969) also believed that intrinsic rewards are better than external rewards and punishment. Both emphasised the role of students' natural curiosity and the importance of allowing students some degree of self-determination over their learning. They reasoned that learning environments which allowed students opportunities for

exploration and discovery would lead to learning which would provide for a much greater degree of growth than more formal, regulatory environments.

The concept of intrinsic motivation which grew out of these and other ideas essentially amounts to doing something for its own sake. Behaviour that is intrinsically motivated occurs without any apparent external reward and is an end in itself, not a means to an end. In an academic sense, this means learning for its own sake, just to know more, and not for the purpose of gaining a good grade. Research in this area has demonstrated a strong relationship between a greater degree of intrinsic motivation and better grades at school. Gottfried (1981) found a positive relationship between intrinsic motivation for studying maths, reading, science, and social studies, and the grades achieved in those subjects.

The flip-side of the intrinsic motivation concept is an extrinsic orientation, that is the concept of learning to gain rewards or good grades and avoid punishment which is precisely what Bruner (1962) and Neil (1960) argued against. A greater degree of extrinsic motivation has been consistently related to a number of negative outcomes and factors in the academic area. Connell and Ryan (1984) for example, found that extrinsic motivation is significantly related to lower academic performance. Gottfried (1982) has also found that those who are extrinsically motivated display higher levels of anxiety, particularly in a test situation. This is presumably as a direct result of extrinsically motivated people having a greater desire for external reward and a

correspondingly higher fear of failure. Intrinsically motivated students are likely to view exam results as an indication of how much they have learnt as much as an indication of success or failure. The benefits of intrinsic motivation and the deficits associated with an extrinsic orientation do not appear to be generalised over the whole spectrum of learning. Benware and Deci (1984) and Grolnick and Ryan (1987) have found that there appears to be little difference between the two orientations on rote learning tasks, but that when conceptual learning is considered the difference is quite marked. McKeachie (1990) also found that high intrinsic motivation was related to a greater use of elaborative and meta-cognitive strategies.

Factors Influencing Orientation:

One aspect of the learning environment which has a major impact on the development of motivational orientation is perceived control. Even a small amount of self-determination in the classroom leads to increased intrinsic motivation and also facilitates better learning (Perlmutter & Monty, 1978). A child's perception of the classroom as autonomy oriented is enough to increase intrinsic motivation (de Charms, 1976) and to ultimately result in higher grades (Sadowski & Woodward, 1981). The concept of control has also been related to the negative effects of rewards and punishment (McGraw 1978).The introduction of rewards for learning gives control to whoever gives the rewards, the decision as to whether something has been learnt, or is worth learning at all, is given over entirely to the teacher and the student will feel little or no control over their learning.

Competition, which is encouraged or at least implicit in today's school system is also an important factor in increasing the degree of extrinsic over intrinsic motivation. In a competitive environment the aim of learning is to do better than those around you, which does not facilitate intrinsic motivation. The effects of a competitive environment can also be stated in terms of rewards and control. In this situation the rewards received are related to doing better than others, be it in exams or in the classroom. Students' control is also reduced as what is worth learning and whether attempts to learn are successful is dependant on an individual's performance relative to others, particularly as this relative performance is generally determined by somebody else. Deci, Betley, Kahle, Abrams, and Porac (1981) have found that competition does decrease intrinsic motivation, and further to this a cooperative learning environment enhanced intrinsic motivation while leading to less anxiety and greater task involvement.

In the Classroom:

Obviously the ideal situation is to have all classroom learning intrinsically motivated. This however is unlikely to ever be the case. As long as there is mathematics there will be some students who do not want to, or do not understand why they should, study mathematics. Because of this some form of extrinsic regulation will be necessary, so the question is how can we limit the negative consequences of extrinsic motivation?

The answer lies not so much in the rewards offered, but in the way the extrinsic regulation is presented. Token economies are a common way of rewarding appropriate classroom behaviour and have proven useful for promoting order in the classroom and on-task behaviour (O'Leary & Drabman, 1971), but are perceived by students as being quite controlling (Greene, Sternberg, & Lepper, 1976). However, token economies obviously promote extrinsic motivation. Indeed, Greene et al. (1976) found that token economies do not promote the internalisation of goals or self-regulation, two factors important in the development of intrinsic motivation. Bry and Witte (1982) have found that such external regulatory methods can be structured in such a way as to promote self-determination and hence intrinsic motivation.

If these systems are presented in an informational manner rather than in a controlling manner then the desired goals and behaviours are more likely to be internalised. The aim of systems presented informationally is not simply to condition the children to behave in a particular manner, but rather to prompt integrated self-regulation of behaviour so that it becomes internally regulated.

Organismic Integration:

Connell and Ryan (1984) have developed what they call organismic integration theory which attempts to chart the steps by which extrinsic regulation of behaviour can develop into self-determined regulation of activities which are not intrinsically interesting. Connell and Ryan (1984) posited three main steps in this process. The first

is the external regulation of behaviour by immediate contingencies (ie. immediate rewards or punishment). Secondly, the external regulation process is incorporated by the individual as a control over their behaviour. This is called introjected regulation. At this stage however the regulation process is still essentially external and viewed as controlling. The third and final stage is that of internal regulation. Research which has given support to this theory (Grolnick & Ryan, 1987; Vallerand & Bissonette, 1992) has also divided the third stage into two sub-stages. The first is identification, where the individual identifies with the goals and values of the regulatory system, and the second is integrated regulation where these goals and values have been integrated into the individuals own goal and value systems. This is almost, but not quite, intrinsic motivation.

Motivation - Summary:

Achievement motivation, including academic motivation, has been approached from a variety of perspectives. All of these approaches have some merit, but none can truly be said to explain the whole concept of academic motivation. Some, such as McClelland have approached academic motivation as being a unitary construct. This approach has some merit and it appears that a concept of motivation which has a certain amount of predictive value for future behaviour can be developed from this approach. One of the most attractive aspects of this approach is its simplicity, and the task of identifying students who have motivational deficits would be made easier by the ability to use this type of measure.

The rise of a cognitive approach to achievement motivation has seen an increased emphasis on the multi-factorial approach. These theories and models have shown to be more predictive of specific achievement behaviour than unitary measures. The range of cognitions included in the variety of theories is extraordinarily large but can be fitted into three general types of cognition:

1, Performance expectancies

(expectancy-value theory & attributional theory)

2, Causal attributions

(attribution theory & learned helplessness)

3, Self perceptions of competence and control

(including theories of intelligence)

Motivational orientation has also come in for much attention. The helpless versus mastery-oriented view grew out of research into theories of intelligence and the differing goals (learning and performance) set by those with different theories of intelligence. Task- and ego-involvement theories developed from research into childrens' ability to differentiate between ability and effort. The predominant theory in this area however, is the distinction between intrinsic and extrinsic orientations. This is a more generalised approach into which the mastery/helpless and task/ego distinctions

can be fitted (Boggiano & Pittman, 1992). An intrinsic orientation indicates a desire to learn for the sake of learning, with learning both the goal and the reward. An extrinsic orientation however means that the behaviour is motivated by rewards from outside the self, this represents a distinction between, and separation of, goals and rewards that has a detrimental effect on learning and academic performance. The intrinsic/extrinsic distinction has received a great deal of the attention given to the area of academic motivation in recent times.

At present there has been only a small amount of research which has attempted to look at the relationships between these approaches. Lens and Decruyenaere (1991) correlated measures of achievement motivation, orientation, expectancy-value, self-efficacy, affective attitude to the future, and fear of failure. Because of the large sample size used very small correlations were statistically significant (eg. $r=.05$, $p<.05$) which results in almost all measures being statistically significantly related. Of note were relationships between approaches which have little or no theoretical similarity, such as those between orientation and attribution theory and between orientation and expectancy-value. Others were notable more for the relatively low level of their inter-correlations. Attribution theory as postulated by Weiner (1984) suggests a direct link between attributions and affect and resultant motivation. Correlations between affect and the four attributional styles included in the Lens and Decruyenaere study ranged from only .02 up to .11. This may be due in part to the measure of affect used which distinguishes only between positive and negative affect

and not the more specific distinctions used by Weiner. Affect was however related more strongly to achievement motivation, self efficacy, and to fear of failure.

While Lens and Decruyenaere did not attempt to say how all these approaches are related, except in the vaguest way, their work demonstrates that all these theories of motivation are both important and inter-related, and all need to be considered in the context of academic motivation. This profusion of theories attempting to clarify and/or define academic motivation has, while all are partially successful, led to some problems both in research and also in the design of intervention programs. Because of the effects of underlying theory on the direction and results of research and intervention, it is necessary to specify the desired goals and factors of interest before proceeding. For this to be possible a single theoretical approach is not sufficient. What is needed is a unifying structure and/or a kind of "super-theory" which can help define the inter-relationships between the various theories and aspects of motivation and how they combine to form the complex construct which is academic motivation. One of the purposes of the present study is to attempt to propose a structure of academic motivation within which it would be possible to include the myriad of theoretical perspectives. This is aimed at facilitating the identification of motivational deficits in students and to provide a model of how these theories relate to each other rather than to assimilate all these theories into one. That is considered something of a "mission impossible".

ABILITY, MOTIVATION, AND ACHIEVEMENT:

The other general aim of the present study was to clarify the relationships between ability and motivation and their relative effects on achievement. It was hypothesised that motivational orientation and level, or strength, are independent and separate components of overall motivation. This separation is suggested by the differing research approaches. Those which see achievement motivation as a unitary construct have tended to stress the degree of motivation while orientation-based research has often given little or no emphasis to level.

Hypothesis 1; There is a positive correlation between level of motivation and achievement with intrinsic/extrinsic orientation held constant.

Assuming the separation between level and orientation, it appears possible that it is motivation level which is directly related to achievement, while the effects of orientation are more indirect. It is argued here that it is not that intrinsic orientation is related to higher achievement but rather to a higher level of motivation which is in turn related to higher achievement. If this is the case then, if students have the same level of motivation, orientation will not have an additional effect on achievement level.

Hypothesis 2; Motivational orientation will not be significantly correlated with achievement when the effects of motivation level are removed or controlled.

Lastly, because of the strength and consistency of the correlation between ability and achievement (which has been found in previous research), it was hypothesised that ability would prove the strongest predictor of achievement level and that its influence would be less affected by controlling for other variables.

2

METHOD

PARTICIPANTS:

A total of 98 school children participated in this study. All were gained from four form two classes at Shirley Intermediate school in Christchurch. Consent for participation was gained both from the school and the participants' parents or guardians as well as from the participants themselves. Descriptive data of the sample group is shown in table one below.

Table 1:Participant characteristics

	Age (years.months)			N
	Mean	Minimum	Maximum	n(%)
Male	13.01	12.03	13.09	59(60)
Female	13.00	12.01	13.09	39(40)
Total	12.12	12.01	13.09	98

MATERIALS:

Test of Scholastic Abilities (TOSCA):

The TOSCA is a standardised test used to measure verbal and numerical reasoning abilities in primary, intermediate and secondary school students. This test is not an intelligence or IQ, test although it is sometimes used in such a manner, since it correlates highly with the verbal subscale of the Weschler Intelligence Scale for Children. It attempts to measure verbal and numerical reasoning abilities which are related to school learning.

Despite the fact that it is not a true measure of intelligence or even general reasoning ability and that there is a longstanding argument as to its validity and appropriateness in todays' schools, the fact remains that the TOSCA is the most common instrument in this area used in New Zealand schools today. It is primarily for this reason that the TOSCA was used in the present study.

The test is comprised of 70 questions of increasing difficulty for which a time limit of thirty minutes is set. Results from the TOSCA can be used in three different forms; as raw scores, or as stanines or percentile ranks which are standardised compared to age norms set at three month intervals.

Scale of Intrinsic versus Extrinsic Orientation in the Classroom:

The scale of intrinsic versus extrinsic orientation in the classroom (Harter, 1980; appendix 1) consists of 30 items assembled into 5 subscales as well as an overall measure of intrinsic versus extrinsic orientation. The subscales are:

1; Preference for challenge vs preference for easy work,

2; Curiosity/interest vs pleasing teacher/getting grades,

3; Independent mastery vs dependence on teacher,

4; Independent judgement vs reliance on teachers judgement,

5; Independent criteria vs external criteria for success.

Each subscale consists of six items which are distributed randomly throughout the questionnaire.

A major advantage of this scale over most others in this area is its' ability to also recognise extrinsic orientation factors rather than simply provide a measure of high or low intrinsic orientation. It therefore enables participants to be placed on a continuum between wholly extrinsic and wholly intrinsic poles. as the reliability and validity of this questionnaire have been extensively tested, this, combined with the reasons outlined above, made the Scale of Extrinsic versus Orientation in the Classroom suitable for use in the present study.

Additional Measures:

Three other measures were also used in this study. Since the Scale of Intrinsic versus Extrinsic Orientation in the Classroom does not assess the degree or level of motivation it was necessary to do this separately. This has previously been achieved in various ways, but 1 to 3 item measures have been used successfully in the past (Hazelwood, 1989) and this approach was used in the present study. Two items, scored with a 5 point Likert scale were used;

1; I work as hard as I can.

2; I think it is important to learn a lot and do well at school.

As a comparison with the 2 item motivation assessment gained from participants, teachers were also asked to provide a rating from 1 (high) to 9 (low), of participants' "motivation and effort" with regard to academic schooling.
Since the present study was intended to be as relevant to the "real world" as possible, the method of assessing participants' academic achievement chosen was teacher ratings. Until students reach secondary school (and in particular form 5 where external

examinations begin) pupils' level of achievement is largely assessed by their teacher(s). In keeping with this, participants' class teachers were asked to provide a rating of each students' achievement, ranging from 1 to 9 (with 1 as the highest level of achievement).

PROCEDURE:

Participants were tested in their usual class groups in familiar surroundings, ie. their usual classroom and with the class teacher present. All data collection sessions began at about 10.45 am and were completed within one hour. Each participant was given two questionnaires to complete, the TOSCA and a motivation questionnaire comprising the Scale of Intrinsic versus Extrinsic Orientation in the Classroom (Harter, 1980) and the 2 item measure assessing motivation level. Teacher ratings were added to each participant's motivation questionnaire by the teacher on completion.

3

RESULTS

ABILITY:

Raw scores on the TOSCA (table 2) ranged from 10 to 64 out of a possible 70, with a mean of 32.31 and SD=11.78. These were similar to the means and standard deviations of the norm groups used in the standardisation procedure. These raw scores were then transformed into stanines and percentile ranks which take into account each participant's age using a series of three month intervals. For the purpose of the present study it was decided to use percentile rankings, as this provides a standardised score without loss of sensitivity as is the case with stanines.

Table 2: Test of Scholastic Abilities Scores:

	Mean	Minimum	Maximum	N
Raw	32.31	10	64	98
Percentile rank	47.09	2	99	98
Stanine	4.92	1	9	98

ORIENTATION AND MOTIVATION:

Scores on the Scale of Intrinsic versus Extrinsic Orientation in the Classroom (IEO) can range from 30 (highly extrinsic) to 120 (highly intrinsic) and scores from the present study showed a good range within these boundaries. Scores from the 97 participants who correctly completed the IEO scale ranged from 60 up to 114, with a mean of 84.05 which indicates the sample as a whole was slightly intrinsically motivated. However a good range of responses was gained with the mid-point in the scale being well within 1 standard deviation of the mean.

The two item motivation scale displayed a good level of internal reliability (alpha = .74) and ranged from 2 to 10, the extremes possible within the scale, and a mean of 3.96. However, the distribution of the scores showed a significant bias toward a high level of motivation (lower score) with a skewness statistic of 2.60.

TEACHER RATINGS:

Teacher ratings of "motivation and effort" ranged from 1 to 9, again the extremes possible, and the mean rating was 4.38. In contrast to the participants' rating of motivation level, the teacher ratings displayed a very nearly normal distribution, and because of the problems of statistical test validity arising through the use of non-normally distributed data it was decided that the more objective measure of teacher ratings would be used in preference to participants motivation scale for most of the present study.

Teacher ratings of achievement also displayed a good range of scores (1 to 8) with a mean of 4.53.

CORRELATIONS:

The main method of data analysis used to assess the relationship between the variables involved correlations, both bivariate and partial.

Bivariate Correlations:

Bivariate correlations (table 3) were carried out for the 5 main variables, including the students' motivation scale.

Table 3: Bivariate correlation coefficients:

	Achievement	Motivation (teacher)	Motivation (student)	IEO	TOSCA
Achievement	1.0000	.5317***	.3260***	-.4398***	-.6744***
Motivation (teacher)	.5317***	1.0000	.4415***	-.2895**	-.2942**
Motivation (student)	.3260***	.4415***	1.0000	-.2350*	-.2321*
IEO	-.4398***	-.2895**	-.2350*	1.0000	.4544***
TOSCA	-.6744***	-.2942**	-.2321*	.4544***	1.0000

Significance: * p<.05, **p<.01, *** p<.001.

Results on the bivariate correlations followed expected patterns. All variables were strongly correlated with achievement. TOSCA scores displayed the highest correlation with achievement (r=-.6744, p<.001), and although this is a negative correlation this is due to the fact that achievement ratings were given with 1 high. A negative correlation between the Scale of Intrinsic versus Extrinsic Orientation in the Classroom (IEO) and achievement would indicate that higher achievement is related to an intrinsic orientation, and indeed this is the case (r=-.4398, p<.001). Both the student measure (r=.3260, p<.001) and the teacher ratings (r=.5317, p<.001) of motivation level were positively related to achievement. It is quite possible that the extremely skewed nature of the student measure and the resultant lack of overall variance played a part in reducing the correlation with achievement, and it was for reasons such as this

that the teacher rating was used from this point on and is what is referred to (unless otherwise specified) when the term motivation is used in future.

In addition to a significant correlation with achievement, IEO showed two other important correlations, with motivation ($r=-.2895$, $p<.01$) and with TOSCA ($r=.4544$, $p<.001$). These indicate that both a higher ability level and a higher level of motivation are related to a more intrinsic orientation.

The TOSCA and motivation were also correlated ($r=-.2942$, $p<.01$), so a higher level of ability is related to a higher level of motivation as well as achievement and an intrinsic orientation.

Partial Correlations:

Partial correlations were used to investigate the relationship between variables when one or two other variables are controlled, particularly in order to establish how independent each factors' influence on achievement level may be.

Controlling for ability level reduces but does not render insignificant correlations between achievement and motivation ($r=-.5371$, $p<.001$ is reduced to $r=-.4700$, $p<.001$) and also between achievement and IEO ($r=-.4398$, $p<.001$ is reduced to $r=-.2023$, $p<.05$). While these correlations remain significant the reductions, particularly that for IEO and achievement, are quite large. The correlation between IEO and motivation is also reduced when ability is controlled and in this case becomes insignificant ($r=-.1821$, $p=.076$). This indicates that when the influence of a common

factor, ability, is removed there is no significant relationship between IEO and motivation.

When motivation level is controlled the correlations between IEO, achievement, and ability are all reduced but remain strongly significant. That between achievement and ability is reduced but is still at a high level ($r=-.6401$, $p<.001$). The correlation between IEO and achievement is reduced to a slightly larger degree ($r=-.4398$ to $r=-.3527$, $p<.001$) but is also still highly significant. This means that hypothesis 2, that IEO would not be significantly correlated with achievement when motivation level was controlled, has been disproved. The partial correlation between IEO and ability when motivation is controlled ($r=.4033$, $p<.001$) is only a small reduction from the full bivariate correlation.

The final set of correlations with a single variable controlled for were carried out with IEO controlled. All correlations between motivation, ability, and achievement were reduced, but by differing amounts and with differing consequences. Reductions occurred in correlations between achievement and ability ($r=-.6744$ to $r=-.5943$, $p<.001$) and between motivation and achievement ($r=.5317$ to $r=.4697$, $p<.001$). Hypothesis 1, That motivation level would be significantly related to achievement with IEO held constant, has been proven correct. However, the correlation between motivation and ability was rendered insignificant by controlling for IEO ($r=-.2942$ to $r=-.1931$, $p>.05$). This indicates that motivation and ability are in fact independent of each other and are related to each other only in as much a they are both related to IEO.

Three partial correlations where two variables were controlled were also carried out. In the first case, achievement and motivation were correlated while both ability and IEO were controlled. As would be expected, the correlation was reduced further ($r=.4499$, $p<.001$) but is still highly significant. This is also true of the correlation between achievement and ability with both motivation and IEO controlled the correlation is still greater ($r=-.5814$, $p<.001$) than any other variables' correlation with achievement as a simple bivariate correlation. The third hypothesis, that ability would prove to have the strongest relationship with achievement has been shown to hold true. However, when both ability and motivation are controlled, the correlation between achievement and IEO becomes insignificant ($r=-.1345$, $p = .194$). This indicates that the relationship between IEO and achievement is much less robust than those between achievement and motivation or ability.

REGRESSION ANALYSIS:

Multivariate regressions were also carried out to determine the relative size and importance of the contributions of motivation, ability, and IEO to achievement level. When all three variables are entered in a single block in a stepwise fashion, ability is entered first as it explains the largest amount of variance in achievement. The inclusion of ability alone leads to an R-squared value of .45. The subsequent addition of motivation to the equation increases the level of R-squared to .57. In this situation IEO is not added to the equation as it does not make a significant contribution to the explanation of achievement variance above that explained by motivation and ability.

If motivation level is entered first it gives an R-squared value of .28. When IEO is entered to the equation first the R-squared value is only .19. IEO also makes a significant contribution when it is entered second. If entered after motivation, the increase in R-squared is .09 and if entered after ability the increase is .02, both of which constitute a very small increase in the explanation of achievement variance. These regression analyses confirm the results implied from the partial correlations that ability and motivation level have stronger and more robust relationships with achievement than does IEO.

Table 4: R-squared values with one variable in equation:

TOSCA	IEO	Motivation
.46	.19	.28

Table 5: Increases in R-squared with subsequent additions:

	Variable Entered in Equation					
First	**Second**			**Third**		
	TOSCA	**IEO**	**Motivation**	**TOSCA**	**IEO**	**Motivation**
TOSCA		.02	.12		NE	.11
IEO	.28		.18	.21		.11
Motivation	.29	.09		.22	NE	

(NE is used when avariable was not entered.)

STUDENTS VERSUS TEACHERS RATINGS OF MOTIVATION:

Due to the differences between the student and teacher ratings mentioned earlier, it was decided to test for differences between the two measures. Teacher rating data were transformed by simply adding 1 to each value so the range of possible scores for both scales was 2 to 10 and a t-test comparing the means of the two measures was then carried out. The results of the t-test ($t(97) = 7.39$, $p<.001$) indicate that there is a significant difference in the means of the two scales. This indicates that students and teachers differ in their perceptions of student motivation levels.

4

DISCUSSION OF RESULTS

Past research on academic motivation has focussed on the relationships between motivation and ability, motivational orientation and ability, and particularly the relationship between each and academic achievement. One goal of the present study was clarify how these relationships are affected by the third variable and it's relationships, in other words the relationships between the relationships. Of particular interest was the degree of independence shown by motivational level and orientation. Are they independent of each other? Of ability? Do they have independent effects on academic achievement and, if so, how strong are those effects?

ABILITY:

One of the basic tenets of the study of achievement and its predictors is the strength and consistency of the relationship between ability (or intelligence) and the level of academic success achieved. The present study has again shown this to be the case. Not only was there a very strong bivariate correlation (.67), but when the motivational variables were controlled the reductions in the strength of the ability-Achievement relationship are relatively minor. Indeed, even when both motivational level and orientation are controlled the relationship remains stronger than that between either motivational variable and achievement, without any third factor controlled. Singly both motivational variables have little effect on the ability-achievement relationship, controlling for motivational level has virtually no effect on the strength of the relationship, while orientation has a slightly greater effect it is still relatively minor. It was hypothesised that ability would prove to be the strongest and most robust predictor of achievement and this has indeed proved to be the case. Without controlling for either motivational variable, ability appears to explain 45% of the

variance in academic achievement, and when both orientation and level of motivation controlled this figure remains at around a third of the overall variance in achievement.

Ability therefore has a huge role to play in determining academic achievement and this has several important implications for education. There are those who argue that ability (or especially intelligence) is an inherited trait which is not readily altered. If this is so then intervention programmes that aim to increase the academic performance of lower achieving students are operating with a fairly severe limitation on their potential effectiveness. However, while heredity may have a significant role to play, it is likely that learned factors are also important, particularly with relation to ability measures that incline towards reasoning rather than intuitive measures. On tests of reasoning ability (such as the TOSCA) performance can be increased by improving strategies employed by students to solve problems. If the former is true and students, ability level is largely unchangeable then any programme cannot increase a student's level of performance above the limits imposed by that student's ability, and neither can any aspect of achievement related behaviour, such as motivation, that may be reliant on ability. On the other hand, if ability at least has a learned component then not only can ability be improved but other factors that are reliant on ability can also be improved - providing ability is first improved.

In either situation it is important to know which factors are linked to ability and which are independent. If ability and any factors which are reliant on ability are unalterable then any programmes that focus on these are a waste of time and resources. If ability is manipulable then a programme that attempts to improve a student in areas

which are linked to ability would be possible, but ability would also need to be included in that programme if it was to be effective.

MOTIVATION:

Motivation is one aspect of achievement related behaviour that is the focus of much attention when it comes to improving students' academic performance, and it is therefore important to determine the extent to which aspects of motivation are independent not only from each other but also from ability. Before individual components of motivation can be assessed for independence from ability, their independence from each other must first be established. It is of little use to show that motivational level appears to be independent of ability when it is dependent on orientation which is in turn dependent on ability.

When ability level is controlled the relationship between motivational orientation and level is rendered insignificant. This would suggest that while orientation and motivational level are related, this is only true to the extent that both have common variance with ability. This suggestion is strengthened when it is considered that when motivation level is held constant the relationships between orientation and ability and between orientation and achievement are not greatly affected and remain strong. Similarly, controlling for orientation had a relatively slight effect on the relationship between motivation level and achievement. Perhaps most convincingly, when motivation level is entered after orientation in a multiple regression the increase in R-squared produced is almost identical to that produced when motivation level is entered alone.

All of these results suggest that motivational level and orientation not only have separate effects but are actually independent of each other. This means that orientation and level of motivation can be approached separately in both research and intervention programmes. However, it is still necessary to know whether or to what extent, each is independent of ability. As was mentioned earlier this is particularly true for the design of intervention programmes where the effects of ability may need to be included if motivational level or orientation is to be altered.

From the results gained in this study it seems that motivational orientation is linked very closely to ability level. The strength of the relationship between motivational orientation and achievement is greatly reduced by controlling for ability. Indeed, the correlation coefficient is more than halved. The effect of this is to render the significance of the relationship marginal ($p=.048$). This gives the strong impression that motivational orientation has little effect on achievement level other than that which is attributable to ability. This argument is strengthened when it is considered that if orientation is entered after ability in a multiple regression analysis the increase in R-squared is only .02. This means that motivational orientation explains only 2% of the variation in achievement above that explained by ability. It would appear therefore that while the effects of motivational orientation may be independent of motivational level, those effects are not independent of ability. This is in contrast with some previous research (Gottfried, 1985; Lloyd & Barenblatt, 1984) which appears to have shown intrinsic motivation to be independent of intelligence. However, these studies do not separate orientation from level of motivation, they measure intrinsic motivation. This construct includes some part which relates to what is termed motivational level in

the present study. In this way, a construct of intrinsic motivation may appear to be at least partly independent of ability, but this may be due only to the inclusion of motivational level, while an intrinsic orientation is in fact dependent on ability level. It will be argued later that on the evidence of the present study any construct which includes aspects of both motivational level and orientation is erroneous and the two aspects of motivation need to be kept separate in order to avoid similar misleading results.

In contrast, motivational level does appear to be an independent construct, not only of orientation but also of ability. Controlling for motivational orientation results in the relationship between ability and motivational level becoming insignificant. This is not surprising considering that orientation is so closely linked to ability, controlling for orientation necessarily involves removing some of the effects of ability. Two further results perhaps provide more convincing evidence of motivational level's independence from ability. The relationship between motivation level and achievement is reduced when ability is held constant but remains strongly significant. This is in contrast to orientation's relationship with achievement. Further to this, adding motivational level to a regression analysis after ability results in a much greater increase in explained variance than does orientation. In this case a further 12% of achievement variance is explained by motivation level over and above that explained by ability alone.

It therefore appears from the present research that academic motivation cannot be considered as a unitary construct but rather should be seen as a duality. The two

components that combine to produce an individual's motivation are the level, or strength, of the motivation and it's orientation. While both of these constructs are part of an overall concept of motivation, they appear to be quite independent of each other and to have separate effects on achievement level. These effects occur in different ways however, motivational orientation is linked very closely to the ability level of a student and it's relationship with achievement appears to be largely due to it's link with ability rather than to independent effects. Motivational level on the other hand does appear to have effects on achievement level that are independent not only of orientation but also of ability. The combination of motivational orientation and level together account for almost 40% of the variance in achievement. This is a very significant contribution to the explanation of achievement and begins to rival that made by ability at 46%. This is of course qualified by the fact that the contribution of orientation seems to be largely explained by ability. This means that the combination of motivation level and ability explain nearly 60% of achievement variance and the subsequent addition of orientation does not increase this further.

These results have several implications for the area of academic motivation and how it relates to educational achievement. The first is that programmes which focus on increasing achievement by attempting to alter students' motivational orientation to a more intrinsic orientation may be largely ineffective. The link that the present study showed between ability level and orientation would suggest that this would be the case unless an associated increase in ability was also achieved. This apparent finding is however, contradicted by the fact that there are several studies which have shown it to be possible to increase students' intrinsic motivation without, at least purposefully,

increasing ability level (eg. Koestner, Zuckerman, & Olssen, 1990; Rawson, 1992). One factor which these studies have all considered important to increasing intrinsic motivation is perceived competence. This may provide the explanation for the apparent contradiction between the results of the present study, which suggest motivational orientation is tied to ability, and these studies which have shown it possible to manipulate orientation without increasing ability level.

Those with a higher level of ability are naturally more likely to develop a higher perception of their competence than those of lower ability. This means that in situations where motivational orientation has not been manipulated, or in which an extrinsic orientation has been encouraged, such as exist for the most part in schools today, it is those with higher ability who are likely to spontaneously develop an intrinsic orientation. Those studies which have increased students' intrinsic motivation have not assessed whether there was any subsequent increase in performance, they have however noted increased enjoyment of the learning tasks undertaken (Vallerand & Bissonnette, 1992) and this may indeed prove to be the major contribution of an intrinsic orientation to academic achievement. While ability and motivation level provide the bread and butter of achievement, orientation may be the jam which does not greatly increase the quantity but has a larger effect on the quality, both of the learning and of the experience.

Because an intrinsic orientation necessarily involves enjoyment and personal satisfaction in completing a task, this provides another clue to the link between ability and motivational orientation. As a general rule, people are less inclined to enjoy tasks

which they are not good at or find very difficult to do and prefer tasks which, although somewhat challenging, are not too difficult. In a classroom situation ability level is likely to be the prime predictor of the difficulty students will have with schooling of a similar level, such as in a single class or year of schooling. Those children with a lower level of ability are likely to find their schoolwork more difficult and therefore less enjoyable than their higher ability peers. For this reason lower ability students are less likely to spontaneously develop an intrinsic motivational orientation. Indeed, Vallerand and Bissonnette (1992) have explicitly related the difficulty of a course to students' enjoyment of that course. Saying that not everyone will enjoy an academic course as a result of it's difficulty (as Vallerand and Bissonnette do) is akin to saying that difficulty will limit the number of students who are intrinsically motivated to study that course. Each student's ability obviously plays a very significant part in determining how difficult they will find any given course, and hence the degree to which they may be intrinsically orientated towards studying that course. While a student may not be intrinsically motivated to study a particular subject, due in part to it's perceived difficulty, they may still have a high level of motivation for it's study.

Motivational level is not reliant on ability level in the same way that orientation is, why is this? The concept of motivational level involved in the present study is quite similar to the unitary concepts of achievement motivation such as that developed by McClelland (eg 1953) and also to expectancy-value theory. Motivational level would appear to be more related to constructs such as the need to achieve, the need to avoid failure, and on the worth (or value) placed on achievement. Neither ability nor motivational orientation need have any great influence on a student's level

of motivation, and this was borne out by the results of the present study. Whether academic learning or achievement is based on external rewards and punishments, or on internal contingencies has little or no influence on the effects of motivational level.

IMPLICATIONS:

The results of the present study have several implications for both research and practical application of academic motivation theory. If the division between motivational level and orientation and their relative independence from other variables such as ability is confirmed then this must be considered in the design of future research. These two components of motivation need to be considered separately from each other, and the definitions and measures used for each need to be free from any inclusion of aspects of the other. Indeed, given the apparent differences in the way level and orientation of motivation interact with other relevant variables it is difficult to see how the two can be combined into a single motivation factor which can be related consistently with other factors. This is particularly true when research by Gottfried (1990) suggests that a student's level of achievement is more predictive of later motivational orientation than the other way around. In this case, to attempt to produce a single motivation factor means attempting to combine a predictor of achievement (level) with an antecedent (orientation). While this may be of descriptive use it is unlikely to be of any practical or predictive use.

As was stated earlier, the split between motivational level and orientation has important implications for intervention programmes and teaching methods in schools. The finding by Gottfried (1990) that achievement level is more predictive of intrinsic

motivation than vice-versa, combined with the finding of the present study that an intrinsic orientation is reliant on ability suggest that motivational orientation is not an appropriate focus for programmes aiming to increase educational performance.

Motivational level is an independent construct which is relatively unaffected by other factors and appears to precede later achievement rather than to be a result of preceding achievement and other factors. Increasing motivational level will have direct effects on students levels of achievement, but may also have several indirect effects as well. Keith and Cool (1992) have suggested that motivation has indirect effects on achievement through it's relationships with other factors such as time spent on homework. An increased level of motivation, and presumably therefore an increased amount of time spent on learning related tasks, may well also lead to an increased level of academic ability due to practice effects, more efficient use of learning strategies and possibly the development of new and better strategies. The increased level of achievement which results from increasing students' level of motivation will also have positive effects on their belief in their own self-efficacy and perceived control, important factors in developing an intrinsic orientation. All of these improvements will contribute to a more intrinsic orientation which means students will have a greater enjoyment of their education and display a higher level of persistence that in turn will likely lead to further increases in achievement, motivation level, and ability.

The sequence of events suggested by the present research, namely that an increase in motivation will lead to an increase in achievement (and possibly ability)

which then leads to the development of a more intrinsic motivational orientation , can usefully be considered in conjunction with organismic integration theory (Connell & Ryan, 1984). One method of increasing students' level of motivation would be the use of a system of external regulation of behaviour, such as a token economy, regardless of the fact that this will likely result in (at least for the short term) an extrinsic orientation. Indeed if the development of an intrinsic orientation is in fact dependent on previous achievement and ability level then motivation with an extrinsic orientation may be all that can be effectively induced at an early stage. This state of external regulation is the first stage in organismic integration. From this stage a process of internalisation of the reasons for the apparent increase in motivation level would result in a progression through the remaining stages, introjected regulation, identification, and integrated regulation. Here the regulation of behaviour is internal, as the goals and values of the regulatory system have been integrated into the individual's regulatory system, but those goals and values (and associated rewards and punishments) are still technically extrinsic as they are defined and set by an external source. However, because of the internal nature of the regulation, the negative effects of external regulation and extrinsic motivation are not present.

LIMITATIONS :

The major methodological limitation of the present study appears to be the measures of students' motivation level. The 2-item student measure gave results which were highly skewed towards the higher end of the scale, while the teacher ratings gave

a good normal curve. Assuming that the teacher ratings are more accurate, this leaves two possible reasons for the skewed student measure. Either the students are completing the scale in a socially desirable manner, or they genuinely believe that are working as hard as they say they are. The second possibility raises questions about children's understanding of what working hard entails, whether when they say "I work as hard as I can." they mean "I work as hard as I know how.". This difference may seem subtle but it has important implications for gaining objective measures of motivation level in a self-report format. Some students may simply be less aware of what working hard, or having a high level of motivation, can entail and therefore rate themselves highly in those areas when, compared to others, they are not.

The present study was also limited by it's exploratory nature. This has led to the results gained from it being fairly general in nature and lacking in specifics of the interactions between the variables involved, and no experimental indication of how the lower level factors are involved. These are the areas in which future research needs to focus.

5

DISCUSSION OF THEORETICAL ISSUES

The results of the present research, particularly the division between motivational level and orientation, may also have theoretical implications. The suggestion made here is that the study of academic motivation can take place on several levels, and that with this assumption a model can be developed which could include the myriad of theoretical perspectives and single factors discussed in the introduction. The first, or most general, level of study is that at which motivational level or orientation are considered. The results of the present study indicate that to go a step higher and study a concept of motivation which includes both level and orientation may not be a valid step. In this model then, there are three main individual characteristics which are related to an individuals academic achievement; ability, motivation level, and motivational orientation. Of these three, ability and motivational level have direct and independent effects on achievement. Motivational orientation however, does not have any direct effects on achievement. The effects of orientation are more likely to be observed in longer term longitudinal studies. A more intrinsic orientation means a more enjoyable experience of learning which will lead to a higher level of task persistence and other behaviours which will contribute to the longer term maintenance of achievement and motivation levels.

The second level at which motivation can be studied comprises the range of theories and individual factors which contribute to the level and/or orientation of motivation. The split between orientation and level can be used as a basis for clarifying the relationships between the different approaches to academic motivation. Some aspects will be relevant to either level or orientation an others will be of importance to both motivational factors. While it is possible here to suggest some of

the ways in which these aspects may relate to the higher level motivation factors, future research in this area should be aimed specifically at testing these empirically.

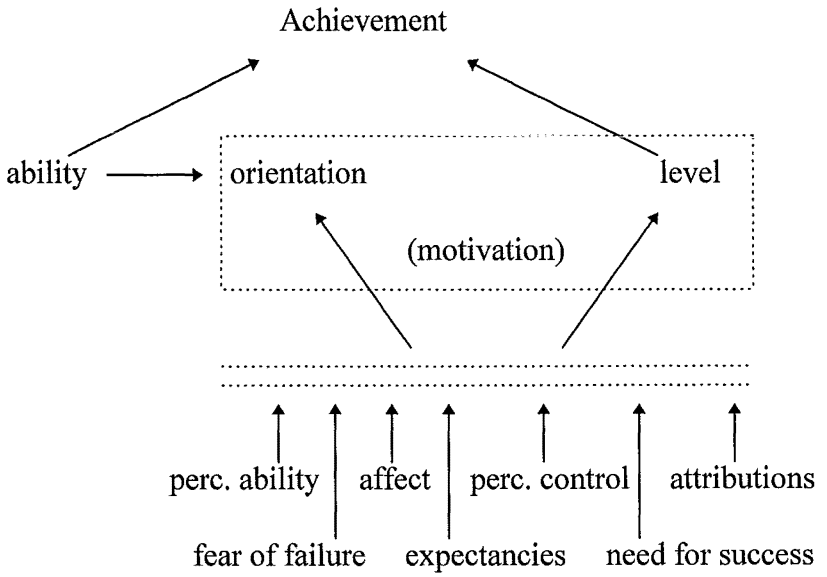

Figure 1: Proposed model of academic motivation.

ORIENTATION:

The first question regarding motivational orientation concerns what is actually meant by orientation. Is it mastery vs. helplessness, task- vs. ego-involvement, or intrinsic vs. extrinsic orientation? The other possibility is that it is a combination of all of these. Boggiano and Pittman (1992) have suggested that both the task- vs. ego-involvement and mastery orientated vs helpless approaches can be encompassed within the more generalised approach of intrinsic vs. extrinsic orientation. Boggiano and Pittman (1992) more particularly include ego-involvement within what they term

the more global concept of an extrinsic orientation. To support this they summarise previous research which has shown the similarities in the behaviour of students termed ego-involved and those said to have an extrinsic motivational orientation, and the similar effects of each style of motivation. Nicholls (1983) on the other hand, proposes that motivational orientation can occur as one of three possible states; task-involvement, ego-involvement, or extrinsic-involvement. In this, he differs from Boggiano and Pittman (1992) in not including ego-involvement within the extrinsic state. Nicholls use a much narrower definition of extrinsic however, and uses the term extrinsic-involvement rather than orientation which may be crucial. For Nicholls, extrinsic-involvement means that an individual is motivated solely by the immediate external reward or avoidance of punishment. If an extrinsic orientation is defined by what it is not, an intrinsic orientation, as much as by what it is, then it encompasses a wider range of motivational styles. If a motivational style which is not intrinsic (ie. the goals sought are other than simple intrinsic reward for learning) is deemed extrinsic then this includes ego-involvement. When ego-involvement is considered in conjunction with organismic integration theory, it could be considered to be the final stage in the organismic integration process. For the ego-involved their aim is to be seen as being of high ability, which is shown by achievement. This desire to learn in order to display those characteristics which are deemed desirable by an external source (schoolmates, teachers, and parents) is consistent with all except the first stage of organismic integration (which corresponds to Nicholl's (1983) extrinsic involvement).

In the second stage, introjected regulation, these external values are incorporated by the student as a control over their behaviour, but are still very much an external control. In either of the internally regulated stages, identification or integrated regulation, the individual student is still concerned with projecting those goals and values which an external authority defines as being desirable. While this may represent an internal regulation of behaviour, it is not intrinsic and should therefore be considered as an extrinsic orientation if the intrinsic/extrinsic framework is to be used. Ego-involvement does however represent a position on a continuum from a purely extrinsic orientation to a purely intrinsic orientation that is somewhere in the middle of the two extremes. It includes aspects of both and also avoids some of the problems associated with a purely extrinsic orientation.

The third type of motivation used by Nicholls (1983), the description of students as task-involved, seems to be almost identical to what others have described as an intrinsic orientation. Nicholls (1983) describes task-involved students as being focussed on the task rather than the self; their conception of ability as being equivalent to learning rather than defined with reference to others, and that learning is an end in itself and not a means to an end. This last idea is the fundamental concept of intrinsic motivation. This definition of task-involvement is undoubtedly also one of an intrinsic orientation. It is not necessarily a definition of the concept of intrinsic orientation however, and task-involvement may be a specific form of the more general concept of intrinsic orientation. A similar situation exists with regard to what some term mastery-orientated behaviour. Those who have an incremental view of ability, and hence are

mastery-orientated (as opposed to helpless), believe that an individual's ability level can be increased through learning. This view means that the goals they set for themselves are likely to be learning goals, again, learning is the aim rather than a means to an end. Although in this case learning is both the aim and the reward, this is due to the student's connection between learning and ability and is not necessarily learning for learning's sake. This could be seen as representing a shift away from a more strictly intrinsic orientation and a move towards the intermediate position whereby an individual displays aspects of both intrinsic and extrinsic orientations. Contrary to the final stages of organismic integration however, mastery-orientated individuals are still essentially intrinsically orientated.

Motivational orientation can then be considered in terms of intrinsic or extrinsic orientations. Other approaches to orientation such as mastery/helpless and task-/ego-involved can be included in this paradigm, especially when it is considered as a continuum and not in strictly contrasting or oppositional terms. Motivational level is a much simpler proposition to define. It is simply the strength of the motive. In an academic situation, this is the strength of a student's motive to achieve. Whether this motive has an intrinsic or extrinsic orientation is a separate issue. Motivational level is simply the strength of motive an individual displays in working toward their goals. The reasons the student has for working toward these goals (and the goals themselves) and the rewards and punishments sought or avoided are influenced by an individual's orientation.

In order to determine how the various cognitive factors and theories mentioned in the introduction to this study impact on motivational orientation and level will require research specifically designed to test this. However, it is possible at this point to make several theoretical suggestions which could serve as a starting point for future research. Motivational level is a relatively simple concept and it would appear that it's theoretical underpinnings are equally so. Concepts such as need to achieve and need to avoid failure form the basis of motivational level, which is similar to the drive concept. These concepts can in turn be included in expectancy-value theory. An individual's need for success or fear of failure play a large part in determining the value of success, along with rewards and punishments. Performance expectancies, which derive from past experience and causal attributions, provide a cognitive aspect to motivational level and it is the combination of expectancy and value in expectancy-value theory that leads to motivational level. Motivational level can essentially take the place of other constructs which have stressed the energy, force, or strength of a motive. Once rewards and goal-setting are involved in the discussion, so must orientation.

The more complex nature of orientation makes it more difficult to determine the cognitive processes which lead to the development of either an intrinsic or extrinsic orientation. The present study and past research have shown ability and achievement (and an individual's perception of these) are important precursors of orientation. Indeed, it would appear that perceptions of many factors play a large part in determining orientation; perceived ability, perceived control, and students perceptions as to whether or not their ability level can be increased are all factors

which contribute to motivational orientation. In keeping with Gottfried's (1990) finding that achievement is a better predictor of intrinsic motivation than vice-versa and the present studies linking of ability and orientation, these perceptions are based on past experience and this appears to be a common theme in those theories that contribute to our understanding of motivational orientation.

One of the most comprehensive and wide ranging cognitive theories in achievement motivation is attribution theory. The huge range of possible attributions have a great variety of effects on an individual's motivation through the mediating effects on cognition and affect. It would appear that some causal attributions will affect the level of a student's motivation, while others will affect their motivational orientation. The causal dimension of constancy in particular has been related to concepts which pertain to motivational level (Weiner, 1984). If an individual attributes a positive achievement outcome to a stable factor then their expectations of future success on similar tasks (and others if the causal factor is also considered global) will be raised. If failure is attributed to stable constant factors then expectations of success will be lowered and may lead to feelings of helplessness, a particularly low level of motivation. These effects on performance expectancies are the primary cognitive consequence of causal attributions (Weiner, 1984).

The other consequences of causal attributions, emotional effects, seem likely to impact more on motivational orientation than on it's level. While success or failure is a

prime determinant of whether following affective states will be positive or negative, causal attributions are important in distinguishing between specific emotions such as pride, self-esteem, anger, guilt, and hopelessness. Positive affective states such as pride and high self-esteem as a result of achievement related behaviour are likely to be consistent with the development of an intrinsic motivational orientation. If an individual experiences positive affect as a result of their learning behaviour then it is likely that this behaviour will continue without the need for external reward. Negative affective states on the other hand, particularly those which result from attributions which are internal or relate to the self, such as low self-esteem, are unlikely to lead to the development of an intrinsic orientation. Negative affects may not necessarily directly result in an entirely extrinsic orientation, but they do mean that the development of an intrinsic orientation is highly unlikely if not impossible.

It seems that most of the cognitive factors and theories discussed in this paper relate either to the orientation or to the level of motivation, but that attribution theory has implications for both. In the model shown in Figure 1, attribution theory should perhaps be moved to another level below that shown. It would appear that causal attributions made about achievement related events underpin the development of those factors which are more directly related to academic motivation, such as performance expectancies (level) and affect and perceptions of control and ability (orientation). This would lead, along with the possibilities outlined above, to a modification of the model shown previously to the more precise version shown in Figure 2.

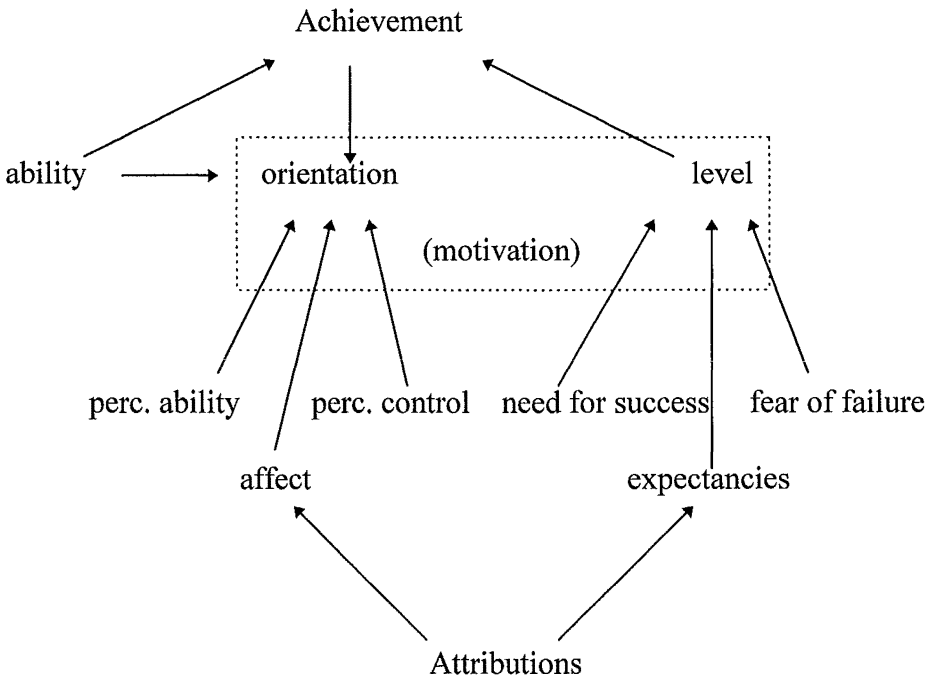

Figure 2: A model of academic motivation, and it's relationships with ability and achievement.

SUMMARY AND CONCLUSIONS:

The present study was essentially an exploratory one aimed at clarifying at least some of the muddy water surrounding academic motivation. The major experimental finding to come of this is the separate nature of motivational orientation and level. The independence of level and orientation of motivation and particularly their differing relationships with other factors such as ability and also with achievement mean that they should be approached as separate entities. Motivational orientation was shown to be closely linked to ability level and to have little or no effect on achievement level above that of ability. Indeed, other research (Gottfried, 1990) has

shown achievement level to be predictive of motivational orientation than the reverse. Orientation therefore appears to be a consequence of other achievement related factors, including achievement, and an intrinsic motivational orientation is an indication of a generally favourable educational situation rather than a factor in producing such a situation. Motivational level on the other hand is an independent construct which has effects on achievement level independently of both ability level and motivational orientation.

This separation of level and orientation of motivation was used as the basis for the development of a model of academic motivation which included a number of single factors and wider theories and also makes the addition of more possible. Motivational level is a relatively simple construct which is essentially contained in expectancy-value theory and as such is a result of performance expectancies which develop as a result of attributions, and the value placed on achievement as a result of an individual's need for success or to avoid failure. Orientation however, is a much more complicated entity that involves a student's perceptions of their control over learning, and of their own ability. The emotional effects of causal attributions are also relevant to the development of motivational orientation, as are ability and achievement.

Both the experimental results and the model developed around them have some important implications for future research and practice. Orientation and level of

motivation cannot be considered as a single entity if these conclusions are correct. This is so not only because of their differing origins but as much because of the difference in their interactions with other variables. Because of the fact that orientation is a consequence and level is a precursor of achievement level the two cannot be considered in one motivation variable with regard to achievement. This is true not only in research but also in practice. Educational interventions which aim to increase students' performance and which focus on motivational orientation may be largely ineffective. The links between ability and orientation and between achievement and orientation mean that without an increase in at least one of ability and achievement, increases in intrinsic orientation are unlikely to be significant. Gottfried's (1990) research would also suggest that increases in achievement are not necessarily a likely result of such an intervention in any case. Motivational orientation is better used as an indicator of the success of interventions which focus either on motivational level or ability.

FUTURE RESEARCH:

One of the first priorities of future research in this area should be the development of a reliable and valid measure of motivational level. This needs to be done in such a way that there is no confusion between level and orientation. Measures of both need to be completely free of contamination by any aspects of the other. Orientation measures would ideally be able to distinguish between the different stages and forms of intrinsic and extrinsic orientations.

Further research is also needed to clarify more fully the relationships discussed earlier. This would involve using measures of the various individual factors (perceived control, performance expectancies etc) and attributional styles, as well as measures of ability, motivational level and orientation, and achievement. Because of the nature of the postulated relationships (ie. some predict achievement and others are a consequence of it) it is also necessary to utilise longitudinal research in order to fully map out how the various components are related to each other and to achievement.

6

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APPENDIX 1:

Motivation Questionnaire

(Including Scale of Intrinsic vs Extrinsic Orientation in the Classroom, student ratings of motivation level, and teacher ratings of motivation and achievement.)

ACH: ☐

EFF: ☐

MOTIVATION QUESTIONNAIRE

(Department of Psychology, University of Canterbury)

Sample Questions

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
(a)	☐	☐	Some kids would rather play outdoors in their spare time	BUT	Other kids would rather watch T.V.	☐	☐
(b)	☐	☐	Some kids like hamburgers better than hot dogs	BUT	Other kids like hot dogs better than hamburgers.	☐	☐
1.	☐	☐	Some kids like hard work because its a challenge	BUT	Other kids prefer easy work that they are sure they can do	☐	☐
2.	☐	☐	When some kids don't understand something right away they want the teacher to tell them the answer	BUT	Other kids would rather try and figure it out by themselves	☐	☐
3.	☐	☐	Some kids work on problems to learn how to solve them	BUT	Other kids work on problems because you're supposed to	☐	☐
4.	☐	☐	Some kids almost always think that what the teacher says is O K.	BUT	Other kids sometimes think their own ideas are better	☐	☐
5.	☐	☐	Some kids know when they've made mistakes without checking with the teacher	BUT	Other kids need to check with the teacher to know if they've made a mistake	☐	☐
6.	☐	☐	Some kids like difficult problems because they enjoy trying to figure them out	BUT	Other kids don't like to figure out difficult problems	☐	☐
7.	☐	☐	Some kids do their schoolwork because the teacher tells them to	BUT	Other kids do their schoolwork to find out about alot of things they've been wanting to know	☐	☐

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
8.	☐	☐	When some kids make a mistake they would rather figure out the right answer by themselves	BUT	Other kids would rather ask the teacher how to get the right answer	☐	☐
9.	☐	☐	Some kids know whether or not they're doing well in school without grades	BUT	Other kids need to have grades to know how well they are doing in school	☐	☐
10.	☐	☐	Some kids agree with the teacher because they think the teacher is right about most things	BUT	Other kids don't agree with the teacher sometimes and stick to their own opinion	☐	☐
11.	☐	☐	Some kids don't like difficult schoolwork because they have to work too hard.	BUT	Other kids *do* like difficult schoolwork because they like to figure things out.	☐	☐
12.	☐	☐	Some kids like to learn things on their own that interest them	BUT	Other kids think its better to do things that the teacher thinks they should be learning	☐	☐
13.	☐	☐	Some kids read things because they are interested in the subject	BUT	Other kids read things because the teacher wants them to	☐	☐
14.	☐	☐	Some kids need to get their report cards to tell how they are doing in school	BUT	Other kids know for themselves how they are doing even before they get their report card	☐	☐
15.	☐	☐	If some kids get stuck on a problem they ask the teacher for help	BUT	Other kids keep trying to figure out the problem on their own	☐	☐
16.	☐	☐	Some kids like to go on to new work that's at a more difficult level	BUT	Other kids would rather stick to the assignments which are pretty easy to do	☐	☐
17.	☐	☐	Some kids think that what the teacher thinks of their work is the most important thing	BUT	For other kids what *they* think of their work is the most important thing	☐	☐
18.	☐	☐	Some kids ask questions in class because they want to learn new things	BUT	Other kids ask questions because they want the teacher to notice them	☐	☐
19.	☐	☐	Some kids aren't really sure if they've done well on a test until they get their papers back with a mark on it	BUT	Other kids pretty much know how well they did even before they get their paper back	☐	☐

	Really True for Me	Sort of True for Me				Sort of True for Me	Really True for Me
20.	☐	☐	If a school subject is hard to understand some kids want the teacher to explain it to them.	BUT	Other kids would first like to try to understand it themselves.	☐	☐
21.	☐	☐	Some kids think they should have a say in what work they do in school	BUT	Other kids think that the teacher should decide what work they should do	☐	☐
22.	☐	☐	Some kids like school subjects where its pretty easy to just learn the answers	BUT	Other kids like those school subjects that make them think pretty hard and figure things out	☐	☐
23.	☐	☐	Some kids aren't sure if their work is really good or not until the teacher tells them	BUT	Other kids know if its good or not before the teacher tells them	☐	☐
24.	☐	☐	Some kids like to try to figure out how to do school assignments on their own	BUT	Other kids would rather ask the teacher how it should be done	☐	☐
25.	☐	☐	Some kids are curious and find that a lot of things they can learn in school are really interesting.	BUT	Other kids are not very curious about the things they learn in school.	☐	☐
26.	☐	☐	Some kids think its best if they decide when to work on each school subject	BUT	Other kids think that the teacher is the best one to decide when to work on things	☐	☐
27.	☐	☐	Some kids know they didn't do their best on an assignment when they turn it in	BUT	Other kids have to wait til the teacher grades it to know that they didn't do as well as they could have	☐	☐
28.	☐	☐	Some kids don't like difficult schoolwork because they have to work too hard	BUT	Other kids like difficult schoolwork because they find it more interesting	☐	☐
29.	☐	☐	Some kids like to do their schoolwork without help	BUT	Other kids like to have the teacher help them do their schoolwork	☐	☐
30.	☐	☐	Some kids do their schoolwork because the teacher tells them to.	BUT	Other kids do schoolwork so they can learn a lot of interesting things.	☐	☐

1. I WORK AS HARD AS I CAN.	always	1	2	3	4	never 5
2. I THINK IT IS IMPORTANT TO LEARN A LOT AND DO WELL AT SCHOOL.	very	1	2	3	4	not 5

APPENDIX 2:

Parent/Guardians' Consent Letter

This letter was included on University of Canterbury stationary as a covering letter for the consent form sent to parents/guardians by Shirley Intermediate School.

Dear Parent/Guardian,

Your child's class has been selected to take part in a research study into academic motivation. Your child will be asked to complete two questionnaires, requiring approximately finish. These tests are a standard test of ability (the Test of Scholastic Abilities), and a questionnaire regarding the type and level of motivation. The class teacher will also be asked to provide a rating of each childs' motivation and achievement.

All information gained in this research is confidential and at no time will anyone other than the class teacher be aware of each childs' identity. This research has been approved by the University of Canterbury ethics commitee. If you have any further questions about this please ring me on 326-5920. Your help would be much appreciated.

Yours Sincerely,

John Milne.